TITLE: Obverhead Imagery in the Directorate of Intellilgence

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STUDIES IN INTELLIGENCE

A collection of articles on the historical, operational, doctrinal, and theoretical aspects of intelligence.

Looking back

Overhead Imagery in the Directorate of Intelligence

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On 1 October 1993 the Office of Imagery Analysis (OIA) was formally transferred from the Directorate of Intelligence (DI) to the National Photographic Interpretation Center (NPIC) in the Directorate of Science and Technology (DS&T). Rae Huffstutler, former CIA Executive Director, earlier said that the merger is intended "to keep us from having two organizations both labeled as imagery organizations; to put all of our imagery analysis assets under one roof...; and to consolidate some support, training, and career service management assets in the face of (the) downsizing of the imagery populations."[1]

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Although OIA will still be providing current and in-depth imagery analysis support to the DI, for the first time in 41 years the DI will not have an internal imagery analysis component. This is the end of an era, for it was in the DI Office of Research and Reports (ORR) in 1952 that the use of overhead imagery as an intelligence source began in CIA.

Need for New Methods

As the Cold War began to take shape in the late 1940s, traditional methods of intelligence collection against the Soviet Union were not sufficient. Interest in overhead photography as an additional source grew out of the World War II experience of a group of analysts and managers in CIA's Office of Reports and Estimates, who recalled the role that overhead photography had played as an intelligence source. Among this group, Frederick A. Voigt, a COMINT specialis(b)(6)mbered that a fellow officer in Army G-2, had been in charge of a small unit late in the war engaged in the joint exploitation of reconnaissance photography and communications intercepts. Voigt recommended asking (b)(6) to study the joint exploitation of COMINT and photography as part of the all-source effort in CIA.

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In his report, stressed the need for constant and free interchange of information between imagery specialists and their analytical counterparts. recognized clearly the value added from photointerpretation closely integrated with the production of strategic intelligence for use by policymakers and planners at the highest levels of government. His proposal for an all-source photographic exploitation capability was submitted to the recently formed ORR, which had assumed responsibility for production of economic and geographic intelligence in the DI. Robert Amory, who later became Deputy Director for Intelligence (DDI), and Chief of Geographic Division Otto Guthe supported the proposal.[2]

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Getting Started

The Photographic Intelligence Division (PID) was formally established on 2 November 1952 within the Geographic Area of ORR. PID would have a T/O of 13 and be housed CIA's headquarters at 2430 E Street, NW. ORR's Geography and Cartography Divisions. PID would only slowly fill out its ranks over many months as tight budgets constrained growth and recruitment suffered from a low GS grade structure. Most recruits had had photointerpretation experience from World War II or Korea or were working as civilians for the military.

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Overhead photography available at this time and the equipment to exploit it were limited by today's standards, but it was still useful for certain kinds of requirements. Captured German and Japanese World War II

archives provided a major source of photography. More recent, limited coverage was available from shallow penetration missions along the periphery of the Soviet Bloc.

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These early photointerpreters (PIs) worked from individual paper prints using folding pocket stereoscopes with 4x magnification. They had access to all other sources of reporting on their study areas for insight into what the photography might reveal. Working closely with geographic analysts in ORR, a majority of PID resources were devoted to studies

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Information from overhead photography was also used to judge the credibility of reporting from other sources. For economic analysts in ORR, overhead photography, even if dated, yielded useful information on the existence of Soviet industrial plants and their physical characteristics.

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Art Lundahl arrived as Chief of the PID in May 1953. Lundahl served as a photointerpretation officer with the US Navy during World War II, and he was the second-ranking civilian at the US Navy Photographic Interpretation Center when hired by CIA. Under his tutelage, overhead photography and its use as an intelligence source in CIA came into its own in the 1950s and 1960s.

PID moved to more spacious quarters in M Building soon after Lundahl's arrival. Relocation also had the advantage of collocating PID with ORR's economic analysts but at the expense of separation from ORR's geographic component. The benefit of having an imagery intelligence component physically located and closely integrated with all of its intelligence production constituents was not achieved until years later. Collocation had the dual advantage of keeping the PIs in touch with the latest reporting and judgments on issues, and all-source analysts closely apprised of new intelligence from imagery. Collocation also facilitated the frequent free exchange of ideas in an informal setting.

Important Contributions

Almost two years after its founding, PID played a major role in a project assessing supply routes in southeastern China that evolved into current intelligence and crisis support. The Office of Current Intelligence, as a contingency measure in October 1954, requested photographic support to provide information on the major roads and rail lines leading to the area of mainland China opposite the Nationalist-held offshore islands, the Tachens, Quemoy, and Matsu. By January 1955, as work on the project continued, the Chinese Communists increased the pressure on the offshore islands. Communist troops seized one island, heavily bombed another, and shelled still others with artillery. The mainland government restated its intention to conquer Taiwan.

As the crisis built, President Eisenhower requested emergency authorization from Congress to use US forces to protect Formosa and other islands. PID increased its effort on the logistics project as ORR levied a further requirement for support to its contribution to a National Intelligence Estimate. This work and other reporting on Communist Chinese activities in the Formosa Straits area were supported by current photography from the US military.[5]

This was the first of many foreign crises over the years where OIA and its predecessors were to provide direct imagery support as part of an intensive DI effort to produce key intelligence for decisionmakers. PID had come of age and proved itself worthy in crisis support, and the value of recent photography to reporting on current issues had been demonstrated.

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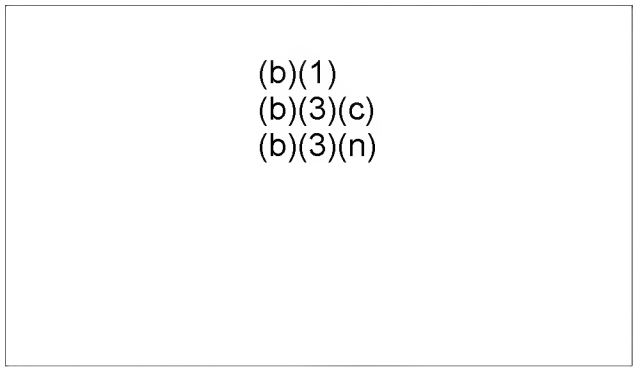

The U-2 Program

Development of overhead reconnaissance technology, driven by the Cold War, was soon to have a major and sustained impact on PID's fortunes. First would come overflights of the Soviet Union by the U-2 aircraft, to be followed in a few years by the advent of reconnaissance satellites.

In November 1954 an intelligence advisory committee chaired by Edwin H. Land, inventor of the Polaroid camera, and consisting of five members from the academic and scientific communities, recommended to President Eisenhower that the US develop a peacetime overhead reconnaissance program. The committee believed that CIA should manage this peacetime program because military overflights in armed aircraft could provoke a war. Eisenhower approved the development of the system, but wanted it handled in an unconventional way so that it would not become entangled in the bureaucracy of the Defense Department or troubled by rivalries among the services.[7]

The assignment of the U-2 project to CIA was to have dramatic consequences for PID because when the aircraft became operational, CIA, as manager of the program, would be in the driver's seat for exploitation of the resulting photography.

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Significantly, PID would continue to be responsible for imagery support to intelligence production in CIA [redacted] but it would also be expected to report U-2 photographic exploitation results to the Intelligence Community. The US military services were invited to participate in the exploitation effort; the Army, and, to a lesser degree, the Navy participated. The Air Force did not participate. Art Lundahl had long advocated centralization of photointerpretation in support of national intelligence objectives.[8 9]

PID became the exploitation element in HTAUTOMAT, the project name devised for the task force assembled from PID and parts of the Office of Central Reference for support. This large, [redacted] (b)(1) exploitation effort took root in July 1956 in the Steuart Motors building at 5th St. and New York Ave., NW—just three blocks from the Gospel Mission. The neighbors must have wondered about people coming and going at all hours of the day and occasionally during the night, with mysterious vans delivering unmarked heavy boxes.

The first eight U-2 missions over Soviet Bloc territory were flown between 20 June and 10 July 1956. Ten Russian penetration missions were flown between early August and mid-September 1957. Gary Powers's ill-fated flight on 1 May 1960 was the 24th and final deep-penetration overflight of the USSR.[10]

Dual Results

CIA's exploitation of the U-2 missions produced both current and long-term results. In the current timeframe, doubt was cast on both the "bomber-gap" and the "missile-gap," regarding the proposition that the US was lagging behind the USSR in either category of weapon. This was a matter of contention between the CIA and Defense Department and of major concern in Congress and the White House.

The BISON and BEAR long-range bomber production numbers were revised downward to the lower CIA numbers as a result of the U-2 evidence. U-2 missions flown along major Soviet rail lines in search of deployed SS-6 ICBM sites revealed none. The conclusion was that the SS-6 was still under development; there was no credible evidence that the Soviets had deployed as many as 100 missiles, a position held by the Air Force.[11]

Longer term, with U-2 photography of the Soviet Bloc, CIA PIs began establishing the substantive base of Soviet strategic R&D, military, and industrial analysis that has continued into the 1990s. This was not an easy beginning because in the U-2 era there were just too many unknowns about the Soviet Union. For example, in 1956 there was no institutional knowledge of what Soviet strategic R&D and nuclear and guided-missile facilities would look like on the U-2 photography. As a start, domestic U-2 missions were flown over similar US facilities to give CIA PIs an idea of what to look for in the USSR. Once the U-2 coverage of the USSR was available in the Steuart Building and the initial exploitation of a mission completed, plans were set in motion to convene a meeting of experts, including CIA PIs, all-source intelligence analysts, engineers, scientists, and academics. People such as (b)(6) were invited. In these working sessions each could bring his or her particular expertise to bear on the solution of important unknowns. In this fashion, the most likely function of complex, strategically important facilities was systematically derived.[12]

These assessments were preliminary, however, and additional information from later photography and other sources over time led to more complete understanding of Soviet strategic, conventional military, industrial, and economic programs. This process illustrated the beginnings of in-depth substantive expertise and analysis in the exploitation of imagery in CIA.

U-2 missions were also flown in the mid- to late-1950s and exploited by PID PIs in support of intelligence needs (b)(1) (b)(3)(n)

With the success of the U-2 program securing the role of overhead photography as an important intelligence source in the DI, and follow-on overhead collection programs in development, the DDI approved reorganization and expansion of HTAUTOMAT. The project was resubordinated from ORR to office-level status under the DDI and renamed the Photographic Intelligence Center (PIC).[13]

With the PIC's establishment, Art Lundahl was moving closer to his goal of consolidating imagery exploitation into a national center that would provide imagery intelligence and support services to all national-level consumers, civilian and military. Projects that were deemed "national" in scope by the PIC requirements staff were assigned to joint teams for completion by Army, Navy, and CIA PIs working individually but combining their results into a single Center product. These projects sometimes involved important complexes such as the Kapustin Yar and Tyuratam Missile Test Centers or atomic weapons facilities. Photographic exploitation for the CIA alone was done within the PIC by the Photographic Analysis Division (PAD).

Satellite Reconnaissance

The shootdown of Gary Powers's U-2 flight on 1 May 1960 ended this remarkable intelligence collection effort against the Soviet Union, but other programs were soon to fill the collection gap. The first successful satellite mission—a film-based, wide-area search system—was successfully launched in August 1960, the same month that the Soviets convened their show trial of Gary Powers in Moscow. This was to be the first generation of a succession of satellite reconnaissance systems that would become a mainstay of worldwide US intelligence collection. PAD and its successors would continue to prosper, along with this new source of material.

Art Lundahl achieved his goal of a national photographic intelligence center in January 1961 with the issuance of NSCID 8. PIC became NPIC, and the newly established DIA would become a participant in NPIC.

Cuban Missile Crisis

The Cuban missile crisis demonstrated the efficacy of Lundahl's national center concept. Although Soviet medium-range ballistic missiles were not identified on U-2 coverage until mid-October 1962, monthly U-2 missions had been flown over Cuba since the Bay of Pigs operation in April 1961. These missions were exploited by teams of CIA/PAD and DoD civilian and military officers who conducted a preliminary scan of each mission to report new intelligence developments.

As the Soviet involvement in Cuba grew, so did the frequency of the U-2 missions. By May 1962, U-2s were flying two missions a month over Cuba, and PIs began seeing increasing amounts of Soviet military equipment arriving in-country. On 15 October 1962 a combined exploitation team exploiting a U-2 mission flown the day before reported a concentration of tents and military vehicles in the San Cristobal area, about 50 miles west-southwest of Havana. After much study, six long, canvas-covered objects were identified as missile transporters. The only known Soviet missile of that size was the SS-4, a single-stage, nuclear-capable missile with a maximum range of 700 to 1,000 nautical miles. Three sites with missile equipment were found; none were judged to be operational. The National Security Council and the White House were briefed, and U-2 flights were flown every day. The Intelligence Community, including the NPIC exploitation teams, went on 24-hour duty. President Kennedy went on television the evening of 22 October 1962 to disclose the developments and to announce a quarantine of Cuba.

The Soviets backed down, and over the next few weeks withdrew the missiles as U-2 overflights continued and the NPIC exploitation teams monitored developments.[14] NPIC received plaudits from the White House and the national security community for its role in the crisis. PAD, CIA's portion of the combined exploitation teams, had acquitted itself well.

By the conclusion of the crisis and with national reconnaissance programs now in full swing, it was time for larger quarters to accommodate NPIC's continuing expansion. The move from the Steuart Building to Building 213 in the Washington Navy Yard took place in January 1963. PAD and its successors would remain at the north end of the third floor of Building 213 for the next 27 years.

NPIC's starring role in the Cuban missile crisis, DIA's participation in national imagery exploitation activities, and the increasing amount of satellite imagery requiring an initial scan for new intelligence developments put increased pressure on PAD to support these activities. Inevitably, one could expect PAD's support to CIA requestors to suffer, even though there was no intent for that to happen.[15] The result was a more formal separation of PAD's efforts against national and CIA departmental requirements.

Another Exploitation Element

To manage these competing demands, in June 1963 plans were implemented to establish a second imagery exploitation element in NPIC. This component would be staffed equally by CIA and DIA/DoD photointerpreters and managers, and support national-level requirements. What had begun as ad hoc joint project teams between CIA and DoD with HTAUTOMAT was now being carried a step further.

The new component was called the Photographic Analysis Group (PAG), and PAD would revert to an earlier name, the Photographic Intelligence Division. Staffing of CIA PIs in PAG would be managed by PID. PIs and managers from PID would serve 18-month rotational assignments in PAG. PID would be responsible for the career management of CIA officers in PAG. It would be four years before the close ties between PAG and PID were severed and each would go its separate way. PAG would become the NPIC Imagery Exploitation Group and eventually part of the DS&T; PID would eventually become OIA, remaining in the DI.

PID had now come full circle from its origins in November 1952, returning to its original name and basically its original mission, CIA departmental photographic support. In June 1965, with imagery analysts assigned, PID was renamed the Imagery Analysis Division (IAD), NPIC. (b)(1) (b)(3)(c)

Bureaucratic Conflict

During the mid-1960s, senior CIA managers determined that Agency interests would be best served by further separating CIA departmental imagery support from national-level exploitation. There were two important study groups in 1965 that put the spotlight on the conflict stemming from attempts by the Director of NPIC to manage both national imagery exploitation and departmental imagery support. The first was a CIA Inspector General (IG) inspection. Although laudatory about NPIC's work overall, the IG report expressed concern about a growing imbalance between collection and exploitation capabilities, suggesting that NPIC consider new approaches for greater efficiency. The report suggested that a building backlog of customer requirements was related, at least in part, to a high priority for exploitation of new imagery at the expense of detailed analysis. It also called attention to a lack of discrimination and rigor in accepting and prioritizing exploitation requirements.

Another report suggesting changes at NPIC was done by the Joint Imagery Interpretation Review Group (JIIRG). It was established in late 1965 under US Intelligence Board auspices at the request of the Director, Bureau of the Budget, to the Deputy Secretary of Defense. Imagery collection and exploitation costs associated with the escalation of the Vietnam war had risen significantly, and the budget director proposed that the Defense and Intelligence Communities undertake a joint evaluation of the various requirements for departmental and national-level imagery exploitation with a view to reducing their costs. .

The JIIRG report recommended, among other things, increasing the role of departmental imagery organizations and the decentralization of some national-level work from NPIC to departmental imagery organizations, under the National Tasking Plan. NPIC would be tasked to establish and maintain a national data base of important targets worldwide for use by the Intelligence Community and military commands. The JIIRG report specifically recommended the separation administratively of CIA national and departmental imagery exploitation. [16] [17]

By late 1966 the DDI was compelled to take action. The person assigned at the DDI level to look into CIA imagery management issues was Enno H. Knoche.[18]

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a number of reasons why it was advisable to remove IAD from the direct supervision of D/NPIC and to resubordinate it to the DDI:

- IAD should undertake imagery analysis on all intelligence subjects in order to respond to the unique CIA and DCI responsibilities and to ensure that the Agency's needs for imagery intelligence are met. Most of IAD's imagery work is departmental, therefore its supervision should be departmental, rather than national as personified by D/NPIC.

- Under direct DDI management, tasking of IAD by CIA elements would be improved, especially in prioritizing requirements. This is more a departmental than a national matter and the DDI should end D/NPIC responsibility for IAD tasking.

- Removal of IAD from D/NPIC supervision would relieve Director NPIC of a sizable management burden and allow IAD to compete more successfully for NPIC support services.

- Under the JIIRG-proposed tasking plan, military PI units would become responsible for some national-level intelligence reporting. The Agency would want to use IAD to keep the military PI units as objective as possible, and this can be accomplished better under DDI direction.

- DIA would continue to maintain separate command of its departmental PI resources and would prefer that D/NPIC not concern himself with CIA's departmental imagery management.

- A solution must be found for the question of how to regulate and prioritize Agency-wide imagery support requirements.

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he Executive Director–Comptroller was management and supervision of NPIC. It dealt mainly with concerns over rising costs, the need to institute controls over rising requirements, and the need for greater DoD support to NPIC, which Knoche felt required new approaches regarding administration and management of NPIC. JIIRG report and recommendations in several places. most important to IAD:

> The second point concerns the subordination of CIA/IAD. It will be removed from direct supervision by the Director of NPIC and will be subordinated directly to the DDI. Under terms of the JIIRG recommendations, IAD is authorized to do departmental imagery interpretation in all categories of intelligence in meeting unique DCI and/or CIA responsibilities. This capacity will be carefully nurtured, and we must ensure that IAD is as responsive as possible to all appropriate and validated Agency requirements.

The IAS

The DCI approved the recommendations of the review group, and the IAD was resubordinated administratively from NPIC to the DDI in February 1967.[19] The name of the office was soon changed again, to the Imagery Analysis Service (IAS), in concert with its new status in the DI.

The first director of IAS, Howard Stoertz, Jr., who came from a DI analytical background, worked to put the office more directly in the mainstream of DI intelligence production. He established several goals for the office, which included using imagery as the primary source but incorporating other sources to expand the scope of analysis; going beyond mere factual reporting to assess the implications of the evidence; expecting analysts and managers to work closely with DI research offices to develop collaborative research efforts; and encouraging the development of imagery-based analytical methodologies to increase the value of imagery as a source.[20]

Stoertz served as director from February 1967 to July 1972.

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Over the ensuing years and functioning as a DI office, OIA made significant progress in meeting Stoertz's and subsequent Directors' goals, contributing to the DI's mission of providing intelligence support to policymakers.

Vietnam War Support

In the mid-1960s to early 1970s, IAS worked closely with the DI's ORR and Office of Economic Research (OER) on North Vietnam's ability to sustain th effort in South Vietnam

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When the US air offensive began over North Vietnam in August 1964, IAS did bomb damage assessments (BDA) on industrial and transportation targets. In addition, Secretary of Defense McNamara, who was becoming skeptical of destroyed bridge claims made by DIA that were based on pilot reports, asked CIA in 1965 to provide its estimate of bridge destruction. By the time of the bombing halt of North Vietnam on 31 October 1968, IAS had documented the destruction of 541 bridges and also reported on the construction of countless bypasses. This work proved to ORR/OER that US bombing of North Vietnam and its logistic infrastructure had not seriously hampered the North's ability to sustain its war effort. Moreover, the US was paying an increasingly high price for its attacks in the form of aircraft losses.[21]

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Military Unit Analysis

In the late 1960s, IAS worked closely with the DI's Office of Strategic Research on the buildup of Soviet forces along the Sino-Soviet border. This work and other studies of Soviet ground forces culminated in the early 1970s in publication of breakthrough methodological studies

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Collocation and Integration

In the mid-1980s planning began in earnest to move OIA into the Headquarters compound. DDI Robert Gates and ADDI Richard Kerr believed it important for OIA to be colocated with the other DI offices in order to create the opportunity for imagery analysis to be most effectively and completely integrated into DI substantive output. In May 1984 they announced their goal to move OIA

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OIA moved into spaces at Headquarters in late 1989–early 1990. Despite the many changes that have occurred in the Agency since the collapse of the Soviet Union, results from OIA's move have been uniformly positive. In fact, OIA's adaptation to the post–Cold War world of intelligence has been helped by being in the same neighborhood as the DI and DO offices, task forces, and centers. OIA analysts are now close to the action and have opportunity to participate and integrate their analysis with the rest of the DI as never before.

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Arms Control Role

Building on in-depth analytical studies accomplished over the years on Soviet strategic and conventional forces, OIA became increasingly involved in providing support on arms control issues. Working closely with the Arms Control Intelligence Staff and the rest of the Community, OIA has responded to questions about Soviet forces and programs

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Persian Gulf War

Perhaps nothing has demonstrated the value of OIA's move to Headquarters better than the Office's participation in the Persian Gulf war effort in 1990-91. OIA was a major contributor of intelligence to the DI's Persian Gulf Task Force, in addition to providing analytical support

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Outlook

After 41 years of departmental imagery support to CIA, OIA's role remains the same—maximizing imagery input to DI intelligence analysis

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The Office will continue to maintain its close interaction will the DI, DO, and various centers and task forces. With the OIA and NPIC merger, addi-

tional resources will be available to complement and reinforce OIA's departmental support to CIA. As a result of the economies resulting from the merger, greater efficiencies in the use of increasingly scarce imagery resources should result than would otherwise have been the case.

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